To Northland Properties and Aquilini Investment Group of Vancouver,

My name is Alex Coster, and I am the independent Natural Resource Planner you retained to perform an environmental assessment of the Garibaldi area prior to the filing of a commercial development application to the BC Environmental Assessment Office. With the project parameters provided, I used ArcGIS software to produce a map showing the entire project area complete with roads, elevation, and the desired environmental considerations. Some data concerning protected areas of wild ungulates and ancient forest lands I obtained from DataBC. I addressed concerns that the project would not receive the BCEAO approval to begin construction due to the abundance of protected lands, plants, and animal species.

I began by downloading datasets:

 -Park & Project Boundaries

 -Digital Elevation Model (DEM)

 -Ungulate Winter Range & Old Growth Management Areas

 -Terrestrial Ecosystem Mapping (Protected Areas of prominent Red Listed Species)

 -Contours, Roads, & Rivers

All Layers were then reprojected to North Anerican Datum 1983, UTM Zone 10 to ensure layers are shown correctly proportional to each other. Some of the datasets held information over much of the Lower Mainland, so these layers are ‘clipped’ to the project boundary. The proposed total project area of Garibaldi Resort covers roughly 5472 hectares.

Except for the DEM, these layers are simple polygons, or vectors. The DEM is a raster, a grid of cells that records not only the location of each cell to the geographic coordinate system, but also each cell’s approximate elevation. I used the DEM to assess the relief of the project, and also the first concern that the Resort Municipality of Whistler brought forward, stating that “climatological considerations rule out reliable skiing on the lower 555m” of BC mountains. So, I ‘reclassified’ the DEM to separate areas above and below 555m elevation, and converted the areas below 555m to a vector. This vector covered approximately 1637ha, or 29.9% of the total area.

Next, I analyzed the Old Growth Forest and Ungulate Winter Range zones. These zones are spread out, so I summarized their areas into two vectors based on the total area they encompassed. I found that the combined Old Growth Forest zones covered 371ha (6.8%) and the Ungulate Winter Range zones covered 432ha (4.2%).

According to Environmental Resource Management Ltd., there are red-listed plant species of interest in the project area. There can be no development on their designated areas. A Terrestrial Ecosystem Mapping (TEM) layer provided the information required to extract spatial data concerning these species. First, I queried all red listed species by two tabular attributes: their Biogeoclimatic Unit and Site Series. This selected five species: Falsebox, Salal, Cladina, Kinnikinnick, Flat Moss, and Cat’s-tail Moss. Since all red-listed areas are to be treated the same, I merged all these zones to combine into one polygon to represent a ‘Red-Listed Species Zone’. This zone covers 1358ha, or 24.8% of the project area.

Next came the riparian zones and fish bearing streams. These streams, and surrounding areas, are protected as well to ensure spawning occurs uninterrupted. According to Environment Canada, streams above 555m elevation need a 50m buffer zone, and streams below 555m need a 100m buffer zone. Note that the buffer distance is radius, not diameter. I joined the TRIM rivers layer to the reclassed DEM, and applied the buffer zone distance value to the new layer’s attribute table. I ‘buffered’ the new layer based on the category containing the buffer distance to give the different protected riparian areas. In total, this covers 30.6% of the project area.

 The total amount of protected areas is 3039ha, or 55.5% of the project area. It sounds like a lot, but 1331ha of the total protected area exists beneath 555m elevation. This area will not be well suited for winter activities anyways. At about 580-600 elevation, the village, resorts, and ski-lifts can be built. There are no red-listed species zones, and the ungulate and old growth areas are spread out. Roads already exist to allow for the construction of runways and lift towers, and provide easy access for potential customers coming to the park. Moreover, the peaks best suited for use (steep slope, high elevation) are clear of protected areas.

The biggest environmental concerns to project development are the riparian zones and the old growth forest zones. The riparian habitats are troublesome because they penetrate throughout the project area, even reaching near the tops of the central peaks. Construction must occur around them, and people must not be allowed near them. While the old growth zones do not cover much area, they are situated on prime runway areas. They will have to remain unused.

To avoid the riparian areas, ski lifts could be constructed high enough to carry guests right over the buffered zones. Run ways can be positioned to run alongside the streams without disturbing them, and fences can be erected to keep guests from venturing into them. Signs can be placed around old growth forests and ungulate winter range zones to inform guests to keep out as well.